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EXAMINER

OMGBA, ESSAMA

ART UNIT	PAPER NUMBER
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3726

DATE MAILED: 09/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

CS

Office Action Summary

Application No.
09/862,688

Applicant(s)
Mauer et al.

Examiner
Essama Omgba

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Jul 7, 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-53 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-53 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 21 6) ☐ Other:

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DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in-

- (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
- (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

2. Claim 50 is rejected under 35 U.S.C. 102(e) as being anticipated by Speller, Jr. et al. (US Patent 5,829,115).

Speller, Jr. et al. discloses an electronic control system for use in a riveting process, the system comprising an electrical control unit, an electric motor connected to the electrical control unit, a mechanical transmission operably converting rotational movement of the electric motor to substantially linear movement, and a rivet punch operably advanced by the transmission, the electrical control unit operably determining if a riveted joint is within a desired range, see column 4, lines 25-38, column 7, lines 20-67 and column 8, lines 1-35 and 49-53. The upset distance represents a desired range.

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Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 2, 4, 6, 7, 12, 13, 15, 20, 21 and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Speller, Jr. et al. (US Patent 5,829,115).

With regards to claims 1, 2, 6, 12, 13 and 2, Speller, Jr. et al. discloses an electronic control system for use in a riveting process, the system comprising a rivet and a riveting machine, an electronic control unit 506, an electronic motor connected to the electronic control unit, wherein a force to be applied during the riveting process may be precisely computer-controlled, and the velocity of the electric motor is determined, a sensor 510 connected to the electronic control unit, the second sensor operably detecting a riveting characteristic occurring during the riveting process, one of the riveting characteristics being the output shaft location, see column 4, lines 25-38, column 7, lines 20-67, column 8, lines 1-35 and 49-53, and column 9, lines 4-56. Although Speller, Jr. et al. does not specifically disclose two distinct sensors, however Speller, Jr. et al. precisely controls the riveting force. It is within the general knowledge of one of ordinary skill in the art to use sensors to be able to monitor the riveting force. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have used a

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sensor to monitor the force in the system of Speller, Jr. et al., in light of the general knowledge of one of ordinary skill in the art, in order to provide effective and reliable riveted joints.

For claim 4, see column 5, lines 23-29 and 49-64.

For claim 7, see column 9, lines 4-10, 20 and 21.

For claim 15, see column 5, lines 23-29 and 49-64.

For claim 20, see column 7, lines 44-54.

For claim 21, see column 7, lines 20-25.

5. Claims 3, 8, 14, 51 and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Speller, Jr. et al. in view of Gast (US Patent 4,901,431).

With regards to claims 3, 8, and 14, Speller, Jr. et al. discloses an electronic control system as shown above except for a rivet feeder connected to the electronic control unit, a feed tube sensor wherein the rivet size is sensed by the sensor and an articulating robot attached to and positioning the riveting machine. However Gast teaches such rivet feeder and robot, see columns 13 and 14. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have incorporated a rivet feeder and an articulating robot to the system of Speller, Jr. et al., in light of the teachings of Gast, in order to facilitate transfer of the rivet and enhance the rivet installation process.

For claims 51 and 52, Applicant should note Gast electrical control unit transmits error signals and stops the rivet process if an undesired condition is present.

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6. Claims 5 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Speller, Jr. et al. In view of Zeldman et al. (US patent 3,878,734)

Speller, Jr. et al. discloses an electronic control system as shown above except for the transmission including a closed loop belt. However it is known to use closed belt loops in power transmissions as attested by Zeldman et al., see column 3, lines 34-36. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a closed loop belt in the transmission of Speller, Jr. et al., in light of the teachings of Zeldman et al., in order to provide a highly power transmission capable of being inexpensively manufactured.

7. Claims 9 and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Speller, Jr. et al. in view of Kinkel (DE 3301243).

Speller, Jr. et al. discloses an electronic control system as shown except for a sensor sensing a work thickness. However Kinkel teaches such a sensor, see abstract. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have included a sensor that senses the thickness of the work in the system of Speller, Jr. et al., in light of the teachings of Kinkel, in order to select proper rivet length. Applicant should note that the control system of Speller, Jr. et al. uses checking feedback and continuously compares stored data to output values and continuous adjustment of the system is accomplished, see column 7, lines 34-67 and column 8, lines 1-16.

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8. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Speller, Jr. et al. in view of Gerlach et al. (US Patent 5,679,882).

Speller, Jr. et al discloses a system as shown above except for the sensor being a load cell sensor. However it is known to use load cell sensors for indicating a linearly moving member force as attested by Gerlach et al., see column 1, lines 17-26. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have used a load cell sensor, in the system of Speller, Jr. et al., in light of the teachings of Gerlach et al., in order to assure exact force application.

9. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Speller, Jr. et al. in view of Smart et al. (US Patent 4,988,028).

Speller, Jr. et al discloses a system as shown above except for the sensor being a proximity switch sensor. However it is known to use proximity switch sensors in riveting systems as attested by Smart et al., see column 1, lines 38-42 and 65-68. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have used a proximity switch sensor in the system of Speller, Jr. et al., in light of the teachings of Smart et al., in order to appropriately sense the existence of rivets for instance.

10. Claims 1, 2, 4-7, 12, 13, 15-21, and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Speller, Jr. et al. (US Patent 5,829,115) in view of Hatanaka (JP 04169828).

With regards to claims 1 and 2, 6, 7, 12, 13, 17-21, and 50, Speller, Jr. et al. discloses an electronic control system for use in a riveting process, the system comprising a rivet and a

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riveting machine, an electronic control unit, an electric motor connected to the electronic control unit and sensors connected to the electronic control unit and the electric motor, the sensors indicating various characteristics of the electric motor and various riveting characteristics such as the velocity of the electric motor or the position of the output shaft, the electronic control unit being a programmable computer, see column 2, lines 24-31, column 4, lines 25-38, column 7, lines 20-23 and 42-54 and column 8, lines 17-35. Although Speller, Jr. et al. does not specifically disclose a distinct sensor that is used to sense the riveting force, however it is known to use a sensor with a riveting machine to sense a riveting force as attested by Hatanaka, see abstract. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have use a sensor operable to sense riveting force in Speller, Jr. et al.'s riveting process, in light of the teachings of Hatanaka, in order to provide appropriate riveting force to the joint being made. Applicant should note that since Speller, Jr. et al. senses the rotational velocity of the electric motor, he inherently senses the riveting force since force is a function of velocity. Applicant should also note that Hatanaka provides for comparison of signals out of the sensor at the time of the riveting with magnitudes of stored signals.

For claims 4 and 15, see column 5, lines 23-29 and 49-64 of Speller, Jr. et al.

For claims 5 and 16, Applicant should note that the use of closed belt loops in transmission of electrical motors is well within the general knowledge of one of ordinary skill in the art.

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11. Claims 3, 8, 10, 11, 14, 51 and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Speller, Jr. et al./Hatanaka as applied to claims 1 and 12 above, and further in view of Gast (US Patent 4,901,431).

With regards to claims 3, 8, and 14, Speller, Jr. et al./Hatanaka discloses an electronic control system as shown above except for a rivet feeder connected to the electronic control unit, a feed tube sensor wherein the rivet size is sensed by the sensor and an articulating robot attached to and positioning the riveting machine. However Gast teaches such rivet feeder and robot, see columns 13 and 14. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have incorporated a rivet feeder and an articulating robot to the system of Speller, Jr. et al./Hatanaka, in light of the teachings of Gast, in order to facilitate transfer of the rivet and enhance the rivet installation process.

For claims 10 and 11, Applicant should note that the choice of appropriate sensors is well within the general knowledge of one of ordinary skill in the art.

For claims 51 and 52, Applicant should note Gast electrical control unit transmits error signals and stops the rivet process if an undesired condition is present.

12. Claims 9 and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Speller, Jr. et al./Hatanaka as applied to claims 1 and 50 above, and further in view of Kinkel (DE 3301243).

Speller, Jr. et al./Hatanaka discloses an electronic control system as shown above except for a sensor sensing a work thickness. However Kinkel teaches such a sensor, see abstract. Therefore it

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would have been obvious to one of ordinary skill in the art at the time the invention was made, to have included a sensor that senses the thickness of the work in the system of Speller, Jr. et al./Hatanaka, in light of the teachings of Kinkel, in order to select proper rivet length. Applicant should note that the control system of Speller, Jr. et al. uses checking feedback and continuously compares stored data to output values and continuous adjustment of the system is accomplished, see column 7, lines 34-67 and column 8, lines 1-16.

13. Claims 22-30, 33, 34, 43, 44, are rejected under 35 U.S.C. 103(a) as being unpatentable over Speller, Jr. et al. (US Patent 5,829,115) in view of Cotterill et al. (US Patent 5,752,305).

With regards to claims 22-26, 29, 30, 33, 34, 43, and 44, Speller, Jr. et al. discloses an electronic control system for use in a riveting process, the system comprising a rivet and a riveting machine, an electronic control unit, an electric motor connected to the electronic control unit and sensors connected to the electronic control unit and the electric motor, the sensors indicating various characteristics of the electric motor and various riveting characteristics, the electronic control unit being a programmable computer, see column 2, lines 24-31, column 7, lines 20-23 and 42-54 and column 8, lines 17-35. Speller, Jr. et al. does not disclose the rivet as being a self-piercing rivet operably driven by a punch as controlled by an electrical control unit, and a die operably diverging an end of the rivet without the rivet piercing completely through the exterior surface of a die-side workpiece adjacent the die, the die acting with a substantially relatively stationary die, the rivet being of a hollow and diverging type with a solid head. However Cotterill et al. teaches such rivet, punch and die assembling, see column 2, lines 27-49 and

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figures 1-3. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have incorporated the control system of Speller, Jr. et al. with the rivet and die system of Cotterill et al., in order to improve the riveted joint produced.

For claim 27 and 28, Applicant should note that the position of the electric motor is an obvious matter of design choice.

14. Claims 31, 32, 35-42, 45-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Speller, Jr. et al./Cotterill et al. as applied to claims 22, 34 and 43 above, and further in view of Gast (US Patent 4,901,431).

With regards to claims 35-40, 45 and 46, Speller, Jr. et al./Cotterill et al. discloses an electronic control system as shown above except for a rivet feeder connected to the electronic control unit, a feed tube sensor wherein the rivet size is sensed by the sensor and an articulating robot attached to and positioning the riveting machine. However Gast teaches such rivet feeder and robot, see columns 13 and 14. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have incorporated a rivet feeder and an articulating robot to the system of Speller, Jr. et al./Cotterill et al., in light of the teachings of Gast, in order to facilitate transfer of the rivet and enhance the rivet installation process.

For claims 31, 32, 41, and 42, Applicant should note that Gast electrical control unit transmits error signals and stops the rivet process if an undesired condition is present.

For claim 47, the use of an endless belt is an obvious matter of design choice that is equivalent to Speller, Jr. et al.'s reduction gears mechanism.

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15. Claim 48 is rejected under 35 U.S.C. 103(a) as being unpatentable over Speller, Jr. et al. in view of Hatanaka and Gast.

Speller, Jr. et al. discloses an electronic control system for use in a riveting process, the system comprising a rivet and a riveting machine, an electronic control unit, an electric motor connected to the electronic control unit and sensors connected to the electronic control unit and the electric motor, the sensors indicating various characteristics of the electric motor and various riveting characteristics, the electronic control unit being a programmable computer, see column 2, lines 24-31, column 7, lines 20-23 and 42-54 and column 8, lines 17-35. Speller, Jr. et al. does not disclose the sensor operable to indicate a riveting force, a rivet feeder connected to the electronic control unit, a feed tube sensor wherein the rivet size is sensed by the sensor and an articulating robot attached to and positioning the riveting machine. However it is known to use a sensor with a riveting machine to sense a riveting force as attested by Hatanaka, see abstract. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have use a sensor operable to sense riveting force in Speller, Jr. et al.'s riveting process, in light of the teachings of Hatanaka, in order to provide appropriate riveting force to the joint being made. Gast on the hand teaches such rivet feeder and robot, see columns 13 and 14. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have incorporated a rivet feeder and an articulating robot to the system of Speller, Jr. et al./Hatanaka, in light of the teachings of Gast, in order to facilitate transfer of the rivet and enhance the rivet installation process.

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16. Claim 49 is rejected under 35 U.S.C. 103(a) as being unpatentable over Speller, Jr. et al./Hatanaka/Gast as applied to claim 48 above, and further in view of Cotterill et al.

Speller, Jr. et al./Hatanaka/Gast teaches a control system as shown above except for the rivet having a solid head and a diverging open end which does not completely penetrate a workpiece farthest from the head. However Cotterill et al. teaches such rivet, see figures 1-3. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have used the rivet of Cotterill et al, in Speller, Jr. et al./Hatanaka/Gast's control system in order to avoid unevenness in the thickness of the sheet material encapsulating the rivet.

Response to Arguments

17. Applicant's arguments with respect to claims 1, 2, 4-7, 12, 13, and 15-50 have been considered but are moot in view of the new ground(s) of rejection.

18. Applicant's arguments filed on July 7, 2003 have been fully considered but they are not persuasive.

In response to Applicant's argument that there is no suggestion or motivation to combine Speller, Jr. and Gast, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir.

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1992). In this case, it is mostly desirable to use rivet feeders in combination with riveting machines in order to automate the riveting process and improve productivity. This is old and well known in the art. Rivet feeders are accommodated by both electric and pneumatic or hydraulic riveting systems. No significant reengineering is necessary for this feature is riveting systems as this is standard in the industry.

In response to Applicant's argument that Kinkel does not continuously compare actual workpiece thickness to previously stored workpiece thickness signals, the examiner disagrees in as much as Kinkel measures the thickness of the part to be riveted and coordinate it with a rivet dimension and the results are transmitted to a preselection counter, this represents a continuous operation. It is obvious that different rivet sizes correspond to different thicknesses of the parts to be riveted and it is well within the general knowledge of one of ordinary skill in the art to design a computer program with stored parts thicknesses and corresponding rivets lengths and to use that data and selecting proper rivets for a given parts.

In view of the above remarks, the examiner maintains that a prima facie case of obviousness has been established in the instant application.

References

19. The prior art references listed on the enclosed PTO-892, but not used in a rejection of the claims, are cited for their disclosure of apparatus with extended end portions and slidable hammers.

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Contact Information

20. Official documents related to the instant application may be submitted to the Technology Center 3700 mail center by facsimile at (703) 305-3579/3580. Should Applicant desire to submit a DRAFT response to the Examiner by facsimile transmission, then Applicant should contact the Examiner at the number below for instructions concerning the transmission of DRAFT documents. Applicant is reminded to clearly mark any facsimile transmission as "DRAFT" if it is not to be considered as an official response.

21. Any inquiry concerning this communication should be directed to Examiner Essama Omgba at telephone number (703) 305-2915.

eo 
September 22, 2003

